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CONTENTS:

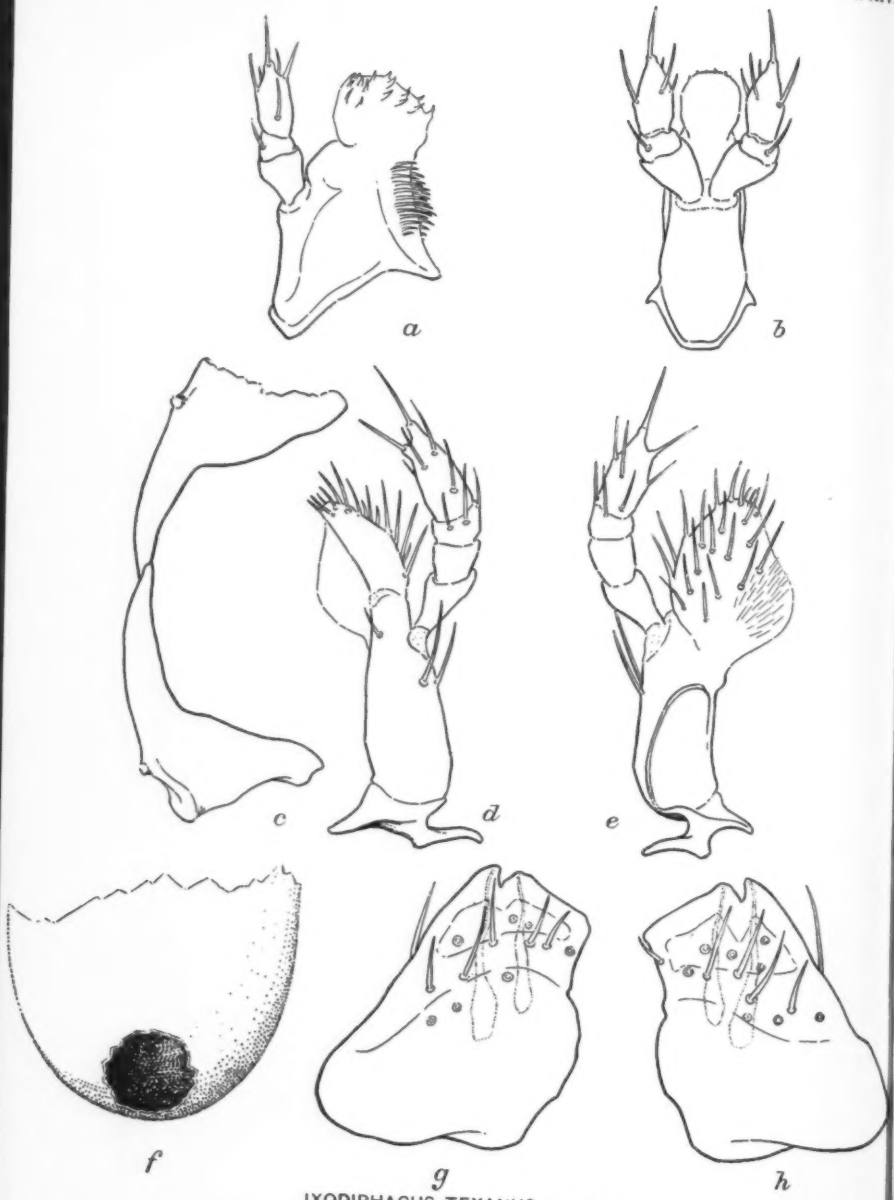
Howard—A Chalcid Parasite of a Tick 375
Skinner—A new Butterfly from Calif... 378
Pierce—Contributions to the Knowledge of Rhynchophora..... 379
Fullaway—Immature Stages of a Psychodid Fly 386
Wood—The female of Protambulix carteri R. and J. 389
Brues—A remarkable new Phorid from Cape Colony..... 390
Banks—A new species of Termes..... 392
Viereck—Two new species of Perdita 393
Cockerell—Notes on some bees collected by Mr. H. L. Viereck in New Mexico in 1902 395
Editorial 399
Notes and News 400
Entomological Literature..... 402
Doings of Societies 406

A Chalcidid Parasite of a Tick.

BY L. O. HOWARD.

(Plate XIV)

Although the Chalcidoid parasites of the family Encyrtidæ have varied hosts, none has ever been recorded from any but a true insect, and even in the Insecta the field is rather definitely limited. In fact, there seems to be no record that any Hymenopterous parasite has ever been reared from an Ixodid, although some are known to breed in Araneids. On March 15, 1907, however, Mr. J. D. Mitchell, of Victoria, Texas, sent to the laboratory of the Bureau of Entomology of the United States Department of Agriculture, at Dallas, Texas, a number of specimens of *Haemaphysalis leporis-palustris,* collected on a cottontail rabbit in Jackson County, Texas. These included two nymphs and numerous adults. The nymphs were placed in a pill-box by Mr. W. A. Hooker to obtain data regarding the time from dropping to molting. The bottom of the pill-box was perforated with a pin and placed on moist sand in a petri dish. On May 1st the box



IXODIPHAGUS TEXANUS HOWARD.

cattle tick is something which the writer's assistants hope to investigate should they be able to secure further living specimens. The observation is most interesting from the biological standpoint. The parasite appears to be quite new, belonging to the sub-family Encyrtinæ of Ashmead's family Encyrtidæ, but does not fit well into either of the tribes founded by him. It may be described as follows:

IXODIPHAGUS gen. nov.

Female.—Mesoscutum entire, convex, parapsidal furrows entirely absent. Mandibles broad, bidentate, with an inner chisel-shaped tooth and a canine tooth. Maxillary palpi 4-jointed, joints 2 and 3 shorter than 1 and 2. Labial palpi 3-jointed short and very stout, joint 2 very short. Hypopygium not prominent. Marginal vein punctiform; post-marginal short, shorter than stigmal which is triangular and descends at a narrow angle into the wing disk. Body robust. Head lenticular from dorsal aspect; eyes well separated; ocelli at angles of right-angled triangle, the distance of the middle ocellus from each of the laterals about equal to that of a lateral from the eye-margin; eyes faintly pubescent. Antennæ somewhat pilose, slightly club-shaped; scape slightly swollen; pedicel ob-conical, longer than joints 1 and 2 of the funicle together; funicle joints subequal in length but gradually widening from 1 to 6; club with its 3 joints visibly separated, somewhat longer than last 3 funicle joints together, and with a long lateral flattened area. Antennæ inserted just below middle of face, their bases widely separated. Antennal scrobes deep. Cheeks and lower face well rounded. Mesoscutum and mesoscutellum subequal in length; axillæ nearly meeting at tips. Legs normal.

Ixodiphagus texanus n. sp.

Female.—Length 0.8 mm; expanse 1.5 mm; greatest width of fore wing 0.2. Body black, shining, somewhat pubescent. Antennæ brown, scape yellowish, especially near base; all tibiæ and tarsi honey yellow; front femora entirely black; middle and hind femora honey yellow at either end. Head and thorax shining, coriaceous. Wings generally and very faintly infuscated; wing veins light-brown, distinct.

was examined, and six Hymenopterous parasites, all dead, were found. A large hole, considered to be an emergence hole of parasites, was noticed in one nymphal tick. On the same day Mr. Mitchell sent in a number of specimens of the same tick taken alive from a jack rabbit in the same county. There were several nymphs in this lot, and these were placed in a pill-box exactly as in the other case. On May 6th this box was examined; no parasites were seen and no emergence hole was observed. But on May 8th another examination showed six specimens of the supposed parasite, all alive. As before, a large hole was observed near the posterior margin of one of the nymphal ticks. The pill-boxes were carefully examined by Mr. Hooker, without finding the remains of any insects. Mr. F. C. Pratt examined the sand in the petri dish, and reported that no cast skins or other indications of the presence of insects could be found. From these circumstances Mr. W. D. Hunter, in charge of the laboratory, concluded that the ticks had been parasitized while they were still on their host, or, possibly, while on the ground after transformation from the hexapod to the nymphal stage, and the parasites were sent to the writer at Washington for examination. Not perfectly satisfied with this evidence, the writer sent to Dallas, and had the pierced skins of the nymphal ticks sent to Washington, placing them in the skillful hands of Mr. R. E. Snodgrass. A very close examination finally indicated a portion of the cast skin of the head of a Chalcidoid larva, showing the characteristic mandibles. These are illustrated at Fig. *c*, Plate XIV, and the emergence hole is shown at Fig. *f*.

Ixodiphagus texanus.—Female: adult above; front view of head below; antenna at right; middle tarsus and tip of tibia at left. Greatly enlarged (original). Drawn by J. F. Strauss.

The evidence now seems conclusive that in the species described below we have a true primary parasite of an injurious Ixodid. Whether this parasite will equally affect the Texas

Described from nine ♀ specimens reared as above described from two nymphal specimens of *Haemaphysalis leporis-palustris*, one from cottontail rabbit, one from jack rabbit, collected by J. D. Mitchell in Jackson Co., Tex.

Type No. 10820 U. S. National Museum.

EXPLANATION OF PLATE XIV.

Ixodiphagus n. gen. *texanus* n. sp., detailed parts:

a, Labium with palpus of adult, from side.
b, Labium with palpi of adult, from below.
c, Mandibles of larva.
d, Maxilla with palpus of adult, from below.
e, The same from above.
f, Outline of body of *Haemaphysalis leporis-palustris*, showing exit hole of adult Ixodiphagus.
g and *h*, Mandibles of adult.

A new Butterfly from California.

By Henry Skinner.

Thecla loki n. sp.

♂.—Expanse 27 mm. Antennae annulate black and white, tip ferruginous, club black. Upper side: Primaries pale brown, with an almost obsolete black lunule near anal angle, with some brighter colored scales above it. A long tail and a short tail, each tipped with white. Underside: Primaries light brown, with a greenish tinge; a mesial white line edged internally with black, crosses the wing but does not reach the inner margin. Secondaries same color, with a tortuous mesial white line from costa to inner margin, edged with black. In some specimens a white discal dash, wanting in others; space outside of mesial band lighter in color. Crossing this space from costa to inner margin is a row of about seven or eight black spots, a black spot between this row and the outer margin and one at anal angle; the margin is a narrow black line.

From five specimens taken by Mr. W. S. Wright at Mt. Springs, San Diego County, Cal., July 5, 1906.

This species is allied to *damon*, *castalis* and *blenina*, and can be at once separated from them by the difference in the character of the band of black spots which runs from the costa to the inner margin. In the other species this band of spots begins near or below the middle of the outer margin.

Contributions to the knowledge of Rhynchophora.

By W. Dwight Pierce, U. S. Bureau of Entomology.

(Paper No. 1, Part II.)

BARINI.

BARIS Germar.

Baris xanthii n. sp.

This species runs in Major Casey's table for the species of *Baris* to dichotomy 12. The legs are black, the integuments highly polished with a more or less pronounced æneous lustre; beak at least two-thirds as long as the prothorax. The species is considerably smaller than *B. lubrica*, has the beak proportionately longer, and the base of the thorax slightly constricted, instead of straight as in *lubrica*. Oblong-oval, rather slender, convex, black throughout, highly polished, with æneous lustre.

Head obsoletely punctured; the beak with elongate shallow punctures in longitudinal lines, arcuate, robust, basal transverse impression distinct; antennæ shorter than the beak, club fully one-third the entire length of the antennæ.

Prothorax scarcely one-third wider than long; sides slightly constricted at base, feebly arcuate to apical fourth, thence strongly convergent and nearly straight to the apex, base not more than three times as wide as head, feebly concave from sides to the truncate apex of the median basal lobe; disk without an impunctate area, punctures moderately coarse, smaller at apex, sparse, rather shallow, placed on a surface very minutely punctate, about one-third the width of the scutellum, and separated by distances greater than their own diameters.

Scutellum subquadrate.

Elytra more than one-third longer than wide, less than twice as long as the prothorax, and wider than the latter at the humeri; sides behind the humeri very feebly convergent, the apex broadly rounded; disk with moderately coarse, deep, abrupt, finely remotely crenulate grooves, the intervals at least twice as wide as the grooves, flat, each with a series of very small indistinct, moderately distant punctures which are indifferently and irregularly placed on all intervals and confused on the third and all beyond the fifth; setæ minute silvery.

Abdomen finely, sparsely punctured, the setæ of the under surface very fine, but pale and distinct. Legs very short, moderately robust, black, finely and distinctly punctured. Length 3.3 mm.; width 1.5–1.6 mm.

This species was described with the type and five topotypes of *B. lubrica* for comparison and the two appear very

distinct. In all of the latter species the beak is short and equalled by the antennæ, while in the new species the antennæ are somewhat shorter. The present species is less robust, has smaller and finer punctuation, and less evident setæ. The anterior coxæ are separated by one-half of their own width, and the sternal groove is broad and shallow.

The type and the paratypes were collected by the writer, feeding on the terminal buds of *Xanthium commune* at Dallas, Texas, August 15, 1906. Subsequently the same species was bred from the roots of this plant, larvæ being found August 29th and pupæ October 2nd.

Type and paratypes deposited in U. S. National Museum, No. 10038; remaining paratype in collection of Cotton Boll Weevil Investigation.

Baris monardæ n. sp.

This species runs in Major Casey's table for the species of *Baris* to dichotomy 23, and belongs next to *inconspicua*, from which it differs by having the beak in the female as long as the prothorax, and in the male four-fifths as long. Oblong-oval, not robust, the upper surface rather feebly convex, black and polished throughout.

Head very minutely, obsoletely punctured, the beak deep and closely so, strongly arcuate; antennæ as long as the beak in the male, and four-fifths as long in the female, the club large, abrupt, with basal joint polished.

Prothorax about two-fifths wider than long; sides convergent, though less so than in *deformis* to apical one-fifth, then strongly convergent and feebly sinuate to the apex, which is slightly sinuate; base about two and one times as wide as the head, straight from the broad, rounded median lobe; disk coarsely deeply and densely punctate, without impunctate line, the punctures not one-half as wide as the scutellum and separated by very narrow margins. Scutellum subglabrate, impressed.

Elytra one-half longer than wide, twice as long as the prothorax, and at the small and moderately prominent humeri slightly wider than the latter; sides convergent, nearly straight in basal one-half; apex broadly rounded; disk with moderately wide, deep, abrupt, finely punctured, crenulate grooves, the intervals flat, narrow, not more than once and a half as wide as the grooves, each with a single series of feeble punctures which are over one-third as wide as the intervals, and not separated by more than their diameters; setæ very small, silvery.

Thorax beneath coarsely, very closely and deeply rugulosely punctate.

Abdomen coarsely, closely and deeply punctate.

Legs rather slender, strongly, closely punctate, tibiæ narrowly sinuate. Length 3.2 mm.; width 1.5 mm.

Described from four specimens (male and female), of which the type and two paratypes are deposited in the U. S. Nat. Mus., No. 10039. Bred from the roots of *Monarda citriodora* at Dallas, Texas. On June 26, 1906, the roots of every plant were full of larvæ of this species; the first pupa was found October 1st, although at the same time adults were found. Larvæ were found as late as October 4th, pupæ October 12th, and adults October 20th. The plants are out of season by July 30th, but the weevils remain in the roots and evidently hibernate as adults in their cells of frass.

Baris cuneipennis Casey.—This species breeds in the roots of *Helenium tenuifolium* at Dallas, Texas. On September 17, 1906, the writer found in the cells in the roots 7 larvæ, 6 pupæ, 13 adults and 5 parasites.

ORTHORIS Lec.

Orthoris cylindrifer Casey.—Like *O. crotchii*, this weevil attacks *Mentzelia*, but not the same species nor in the same manner. It was found (by the writer) to breed in the stems and roots of *Mentzelia oligosperma*, a plant copiously armed with adhesive hairs which occurs mainly on the sides of railroad embankments at Dallas, Texas. The larvae commence attack in the outer parts of the stem, burrowing downward toward the tuberous roots. The attachment of the stem to the root is feeble, and after the larvae have entered the latter, the stem breaks at the slightest touch. In the tuber the larvae burrow about two inches and pupate. The first larvae were found June 26th, adults having been captured on the plants June 18th; larvae and pupae were found until August 7th. The first adult was found in its cell of frass July 25th, and one was found October 4th, probably expecting to hibernate thus.

Group ZYGOBARI.

In studying the weevils which attack the berries of *Xanthoxylum*, two new species were found belonging in the *Zygobaris* group of Barini. The proper location of these may be had by

use of the characterization of genera by Major Thomas L. Casey.* In the key following, Major Casey's numbers are used:

"1. Pygidium oblique and entirely concealed in the female sometimes with the mere apex exposed, especially in the male, except in *Centrinogyna*, where it is vertical and completely exposed in the male . . . . . 17.

"17. Mandibles normal in action, their plane of motion horizontal or nearly so; body without erect setae except in *Zaglyptus*. . 18.

"18. Tarsi with the claws connate or single . . . . . 28.

"28. Elytral striæ normal, distinct, not foveate at base.

"Tarsal claws two in number, completely connate in basal third to half . . . . . 29.

"29. Beak long, slender; body subglabrous and with remotely scattered white scales."

A. Prosternum flat between coxæ; second joint of funicle not much longer than third; elytral striae very fine but broadly feebly impressed and very coarsely punctate; body subglabrous, with remotely scattered white scales . . . . . **Zygobaris.**

B. Prosternum deeply and abruptly sulcate along the middle; second joint of funicle elongate, longer than first and also than five following joints; elytral striae deeply impressed and very coarsely punctate; body subglabrous, with remotely scattered white scales . . . . . **Zygobaroides.**

"Beak short and stout."

A. Prosternum flat; body glabrous, with minute hairs in the remote punctures; antennae inserted beyond the middle, first funicular joint moderate in length; elytral striae very fine, finely but deeply punctate . . . . . **Zygobarinus.**

B. Prosternum sulcate; body squamose; antennæ inserted beyond the middle.

A. "Basal joint of the antennal funicle moderate in length; elytra with large remotely scattered white scales in addition to the denser squamules; species very small . . . . . **Catapastus."**

B. "Basal joint of the antennal funicle very long, sometimes as long as the entire remainder; elytral vestiture often vittate or with denuded spots, but without widely dispersed coarser scales; species moderately large, more or less elongate-oval, or narrowed and parallel, convex . . . . . **Barinus."**

ZYGOBARIS.

LeConte, Proc. Am. Phil. Soc. xv, 317.
Casey, Ann. N. Y. Ac. Sc. iv, 663.

Tarsal claws moderate in length and completely connate, without trace of suture, through at least one-third their length.

* Coleopterological Notices IV, Ann. N. Y. Acad. Sci. vi, 465-469.

Mandibles small, thick, arcuate, notched at apex and strongly decussate. Prosternum flat between coxae, separating coxae by about their own width; subapical constriction present, interrupted sternally by sublongitudinal ridges.

Subapical constriction feeble; prosternum apically with a broad median longitudinal fovea, which is prolonged on each side the coxae by a narrow sulcus; fovea and prolongations externally limited by a small longitudinal ridge; species black; vestiture not much denser ventrally . . . . . **nitens** Lec.

Subapical constriction strong, medianly interrupted below by two ridges diverging toward the coxæ, between which the prosternum is slightly concave to the coxae; species brown; vestiture considerably denser ventrally . . . . . **xanthoxyli** n. sp.

1. **Zygobaris nitens** Lec.

The specimen studied was collected at Key West, Florida, by Messrs. Hubbard and Schwarz in February.

2. **Zygobaris xanthoxyli** n. sp.—Considerably less robust than *nitens*, subrhomboidal, moderately convex, moderately shining, reddish-brown; integuments subglabrous, very minutely punctate, with larger setigerous punctures, the vestiture creamy colored, consisting of very minute setae, with large creamy scales remotely dispersed but more condensed beneath. The scales of the elytra are very remote and large; in the male those on the thorax below are almost as large and but little smaller on the beak, while on the abdomen they are considerably finer; in the female the scales of the beak are reduced to very fine linear squamules, those on the thorax and abdomen also being much finer than in the male. Beak long and slender, evenly, strongly arcuate, basal constriction distinct, feebly compressed and densely punctured at the sides, especially behind the antennae, one-half as long as the body in the female and five-twelfths in the male, smoother and less punctate in the female; antennae inserted at about middle in female, and slightly beyond middle in male, the scape nearly attaining the eyes, the scrobes almost completely inferior, basal joint of the funicle not quite as long as the next three, the second one-half longer than the third; club moderate, elongate-oval, densely pubescent on last three joints, with the basal joint glabrous, except for an apical fringe and composing almost one-half of the mass. Prothorax conical, one-half wider than long, the sides feebly, evenly arcuate; constriction rather strong, disk very coarsely, deeply, closely punctate. Scutellum small, oblong, glabrous. Elytra at base wider than prothorax, rather more than twice as long as the latter, parabolic in outline, the humeral callus not laterally prominent, disk with wide, moderately deep, coarsely punctate striae, intervals hardly convex, each with single series

of large shallow punctures placed behind transverse wrinkles, hardly farther apart than the punctures of the striae. Length 2.5-3 mm.; width 1.2-1.5 mm.

Type ♂ and ♀, also 2 cotype ♂ and 2 cotype ♀, No. 10036, U. S. N. M.; 4 cotype ♂ and 4 cotype ♀ remain in collection of Cotton Boll Weevil Investigation.

These specimens were all bred from *Xanthoxylum* berries collected by A. C. Morgan, at Runge, Texas, May 9, 1906, and Beeville, Texas, May 8, 1906.

PARASITES.

Large numbers of *Sigalphus zygobaridis* Cwfd. were bred from this weevil. The weevil larva carries the parasites under ground, evidently internally, and after forming its earthen cell the parasite devours it and spins a yellowish cocoon. The parasites come out just before the weevils.

Two or three *Catolaccus incertus* Ashm. were bred from the berries, where they evidently kill the weevil larvae and prevent their entering the ground.

ZYGOBAROIDES n. gen.

The beak is strongly tumid at the base in both sexes, although the tumidity is more pronounced and shorter in the female. Beyond the tumid portion, the beak of the female is slender, very smooth, and very sparsely punctate, while in the male it is a little stouter, longitudinally ridged and strongly punctate. The antennae are inserted in the male just behind the basal one-fourth, and in the female at less than one-eighth the length of the beak; the scrobes are almost inferior and reach the eyes; the scape almost reaches the eye, in the female being hardly more than spherical. The first and second funicular joints are both elongate and longer than the five following joints.

The type of the genus is *Zygobaroides schwarzi*.

Zygobaroides schwarzi n. sp.—More robust than *Zygobaris xanthoxyli*, rhomboidal, moderately convex, slightly shining, dark reddish-brown; integuments subglabrous, the vestiture white, consisting of very minute and sparse setiform squamules, with larger linear scales beneath. Beak long and slender, almost straight in female beyond basal tumidity, only slightly curved in male, strongly tumid at base, with the constriction distinct; only sparsely punctate in female, but densely punctured and ridged in male beyond tumidity; tumidity in both sexes strongly punc-

tate; beak one-half as long as the body in the female, and five-twelfths as long as the body in the male. Antennae as long as beak in male, but considerably shorter in female; club moderate, elongate-oval, densely pubescent, with the basal joint composing over one-third of the mass. Prosternal groove broad and deep, extending to metathorax. Prothorax conical, one-half wider than long, sides arcuate; constriction strong; disk very coarsely, closely punctate, with impunctate median line. Scutellum small, oblong, glabrous. Elytra at base wider than prothorax, rather more than twice as long as the latter, humeral callus not laterally prominent; disk with coarse striae, which are widely and deeply impressed and coarsely, closely punctate; intervals convex, each with a series of large, coarse, shallow, approximate punctures. Length 3 mm.; width 1.75 mm.

Described from 1 ♀ and 5 ♂, beaten from *Xanthoxylum* at Logansport, Louisiana, June 6, 1906, by the writer. Type ♂ and ♀ and one paratype ♂ in U. S. N. M., No. 10037, remaining paratypes in collection of Cotton Boll Weevil Investigation.

ZYGOBARINUS n. gen.

This genus is proposed for *Zygobaris coelestinus* Linell, which differs notably from the two species now included in *Zygobaris* and from the closely related species in *Zygabaroides*.

CALANDRIDAE.

RHODOBAENUS Lec.

Rhodobaenus 13-punctatus Ill.—That variety or species with the five thoracic spots, and four lateral and two median elytral spots was bred by the writer, at Dallas, Texas, from the stems of *Xanthium commune*. Larvae, pupae and adults were found in the stems Aug. 4th and 15th, and adults Sept. 11th.

ANTHRIBIDAE.

BRACHYTARSUS Sch.

Brachytarsus alternatus Say was bred in large numbers from the stems of *Sideranthus rubiginosus* at Dallas, Texas, in August. The eggs are laid in the tip of a new side stem or at the base of a flower head; the larvae feed in a small space, surrounding themselves with the brown powdery exuviæ in which they pupate. The breeding is continuous.

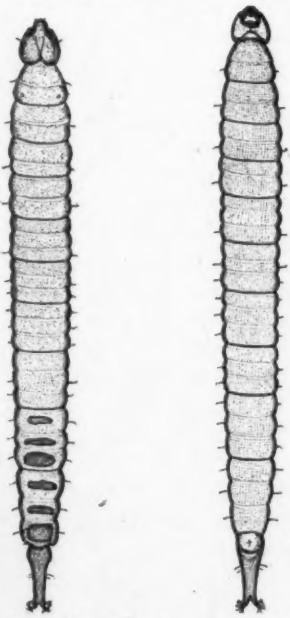
PARASITES.

Microdontomerus anthonomi Cwfd. (det. J. C. Crawford). One specimen was bred as a primary parasite by F. C. Pratt from material collected at Mexia, Texas, September 29, 1905.

the aquatic forms described by Müller, in Brazil,* and by Kellogg, in California.† It differs, however, in some essential respects from Miall and Walker's larva, especially in the character of the last segment.

The body is pale yellowish or whitish, 4.5 mm. in length, the greatest width being .5 mm., cylindrical, and consisting of a head followed by eleven segments. Transverse constrictions subdivide the segments, the first four behind the head consisting of two annuli, the following six segments each having three. The last segment is undivided. Minute and densely crowded chitimous tubercles cover the body in all parts not wholly chitinized, and over the entire body are fine setæ, somewhat more scattered but often occurring in rows. On the dorsal surface of the ninth and tenth segments are six chitinous shields or plates, one to each annulus. These plates are heavily chitinized but otherwise are very simple.

The head is small and strongly chitinized. Minute antennæ consisting of a group of several short rods project from the anterior portion, and on each lateral aspect is a pair of setæ, the anterior seta usually larger than the posterior one. Nothing resembling ocelli or eye-spots is apparent.



a, dorsal. FIG. 1. b, ventral.

The mouth parts closely resemble those described in Miall & Walker's account and consist of jointed or flap-like appendages, all more or less setose or provided with denticulated chitinous plates, and contained in a sunken part of the ventral surface of the head. When the larva is feeding, the movable upper lip, with the long, jointed, setose appendage next it, is extended and retracted in rapid succession, and the larva probably thus provides itself with a continual supply of food.

The last segment of the body, thick at the base where it is formed into a well rounded stump ventrally, narrows toward the apex, forming a respiratory tube. The anal opening occurs on the rounded ventral surface, which has remained unchitinized. The

* Tr. Ent. Soc. Lond. p. 479, 1895.
† ENT. NEWS, xii, p. 46, 1901.

Immature Stages of a Psychodid Fly.

DAVID T. FULLAWAY, Stanford University, Cal.

The Psychodidæ have received considerable attention in America from Banks, Kincaid and others. Twelve species are listed by Mr. Banks in the East (Can. Ent. Vol. 33, p. 273), and in "The Psychodidæ of the Pacific Coast" (Ent. News, Vol. 10, p. 30), Prof. Kincaid describes, from California, Oregon,. Washington, Alaska and the Pribilof Islands, ten other species, with notes on two previously described. Nothing, however, has been recorded concerning the immature stages of any of these, excepting Professor Kellogg's account of the larva and pupa of an aquatic form, *Pericoma californica* Kincaid, found in a California creek bed.

The writer, while collecting on the Stanford stock farm (Santa Clara Co., Cal.), during the 1906 Christmas holidays, found Psychodidæ in great numbers about an unused and leaky watering-trough in one of the paddocks. The ground in the neighborhood of the trough was thickly covered over with rotting straw and manure, and the water dripping from the trough had soaked through the straw, forming pools in places, and, in general, making the whole mass somewhat seepy.

The flies were present in such numbers that it was confidently hoped the immature stages might also be found, and to this end some of the manure was brought into the laboratory for examination. Both larvæ and pupæ were found in it, and from these the adult flies were reared, to be certain of their identity. The species is almost certainly *Psychoda schizura* Kincaid, the characteristic V-shaped ventral plate of the female and caudal appendages of the male closely corresponding to the same characters in Kincaid's description of that species.

The larva (Fig. 1, *a* and *b*) is of the same type as that described by Miall and Walker (see Miall and Walker's account of the immature stages of *Pericoma canescens*, a British species: Trans. Ent. Soc., London, 1895, p. 141), and not like

dorsal surface, behind the large plate (or plates) which bears the respiratory processes, but only six appear in front, the others being hidden by the forming wings and legs. The segments narrow posteriorly, terminating in a fin-like anal segment. Each segment bears on its posterior margin a complete circle of spinous processes, which perhaps assist in holding it securely in an upright position wherever it attaches itself. A pair of respiratory trumpets arise from the anterior portion of the body, consisting of two parts, a short, much crumpled pedicle and a many times longer horn, expanded at the base but narrowed toward the tip, where it ends in a number of circular foramina. A single large trachea passes through the trumpet, opening by the foramina just mentioned. The surface of the trumpets is greatly roughened by transverse folds.

The female of Protambulix carteri R. and J.

By William C. Wood, New York.

Protambulix carteri is described by Rothschild and Jordan in their recent work on the Sphingidæ (Vol. I, p. 180), the species being named from two male specimens, one taken in Nassau, N. P., Bahamas, by the late Governor, Sir Gilbert Carter, and the other from Biscayne Bay, Fla.

Having recently received from Miami, Fla., a pair of this little known Sphingid, I have thought that a description of the female might be of interest, since, so far as I know, it has not yet been described. Rothschild and Jordan's description, which is brief and confined mainly to the points of dissimilarity between *P. strigilis* and *P. carteri*, omits to state that the latter is quite different in appearance. While *strigilis* is bright, and rather vividly marked, *carteri* is dull and obscure in general appearance.

Protombulix carteri R. and J.

Female.—Head brown-vinous, palpi red-fulvous, eyes black, thorax, vinous above and laterally, lappets greenish brown shading off through ochraceous to dirty white at lower end; a small rubiginous patch at base of costa, and below metathoracic tuft. Antennæ a little more slender than in the male, light brown above, ochraceous below, length 13 mm. Abdomen tawny brown above, fringes of tergites vinous, vinous on sides, and yellowish below. Femora red-fulvous like palpi, tibiæ and tarsi grey. Primaries much broader than in the male (greatest breadth ♀ 19 mm, ♂ 16 mm.) the costal outline arcuate, while in the male it is slightly sigmoid. The primaries are of an even, concolorous tawny

respiratory tube, however, is strongly chitinized, the chitinous thickening extending on the dorsal surface to the very base. The flanks of the respiratory tube bear occasional setæ, and its tip is somewhat hollowed to provide for the posterior spiracular openings of the trachæ, two in number, which traverse the tube. From the rim of the concavity at the tip, proceed four small processes, each provided with a bunch of setæ, which serve to form the cup for holding bubbles of air, whence the larva gets its supply of oxygen. An anterior pair of spiracles are borne on the first segment behind the head, occurring well back in the segment. They project from the dorsal surface as a pair of short cylindrical tubes provided with circular terminal openings.

The mode of life of the larva is closely connected with its breathing. The larva, as was said, is found especially in wet manure. If exposed to the air and deprived of the moisture which it finds in its natural surroundings, it quickly becomes dry and hard, and dies. On the other hand, if entirely submerged, *i. e.*, if its air tube is covered (the larva is unable to maintain itself at the surface), it is also killed. It is therefore confined, so far as ability to persist is concerned, to a mere film of water. The necessary conditions are evidently found in the manure beds where the larvæ were so abundant. They are usually found twisting and crawling about, worm-like, over the straw, dragging a thin film of water after them, the anal segment upraised to the surface, where a bubble forms about the spiracular cup. The feeding process has already been mentioned. The larva does not, however, feed continuously, nor is it always in motion. It is often found coiled up, and hidden in the material on which it lives.

Fig. 2.

The pupa (Fig. 2) is 3.2 mm. long, the greatest width being .75 mm. It resembles in general appearance other Nematocerous pupæ, especially those of the Tipulidæ.

It is at first pale in color like the larva, but upon settling down and losing its motility turns dark brown. The body is largest anteriorly, where the forming organs of the imago, wings, legs, eyes, etc., are plainly outlined in the pupal sheaths. Nine segments are visible on the

brown, several shades lighter than in the male, and without the cinereous tinge, verging on olivaceous, which distinguishes the latter. The markings are almost precisely the same; a vestigial discal line crossing the wing at outer third, a dark spot just below costa at outer third (not encroaching upon the costa in the ♀, while in two ♂ specimens it does) a trace of a similar spot near apex, and several indistinct spots on basal third of costa. A dark dash on lower border just within posterior angle, prolonged as a line toward base of wing along submedian interspace. A small brown dot at base of wing, and a similar dot on submedian vein a short distance from base. The edges of the primaries are very slightly darkened.

Secondaries bright tawny red, with traces of two discal lines as in the male, but much less distinct. The marginal band of the male is practically absent, except as a suffused greyish patch along inner margin above anal angle. Beneath, same as in the male. Expanse, 106 mm. Length of body 40 mm.

One specimen from Miami, Fla.

The female differs from the male chiefly in the form of the primaries, in their lighter, brighter color, in the lighter color of the abdomen, and in the brighter and almost immaculate secondaries. The sexes are nearly similar beneath.

My specimens, which are in fair condition, were sent me by Mr. W. S. Dickinson, who took them at flowers in the gardens of the Hotel Royal Palm, on April 15th, of this year.

A remarkable new Phorid from Cape Colony.

By Charles T. Brues, Public Museum, Milwaukee, Wis.

Up to the present time scarcely any Phoridæ have been described from the southern part of the African continent. In fact, only three genera have hitherto been known to occur near the Cape, one species belonging to the peculiar myrmecophilous genus *Psyllomyia* Loew, and several others to the two extraordinary termitophilous genera *Termitoxenia* Wasmann and *Termitomyia* Wasmann, which form the most aberrant group of Phoridæ known.

It, therefore, gave me great pleasure to receive recently an interesting undescribed Phorid of the genus *Aphiochaeta* from my friend, Dr. Hans Brauns, of Willomore, Cape Colony. It differs considerably from the majority of the members of the

genus, although a number of related species have been described from Europe and North America.

Following is the description of both sexes of the species, which I have named in honor of its discoverer, who has done so much toward making known the remarkable insect fauna of the Cape.

Aphiochaeta braunsi sp. nov.

Male.—Length 2 mm. Shining black; the antennæ, palpi, and most of the legs and scutellum yellow or luteous. Wings hyaline, infuscated at the tips. Front long and polished. Head rather small, the front twice as high as wide, smooth, polished black, the vertex sharp and narrowly reflexed; one pair of approximated proclinate bristles; a reclinate one at each lower corner; next row above consisting of only one pair close to the eye margin; following row very strongly curved upward medially; upper row of four normally placed. Antennæ small, ovate, honey-yellow; arista dorsal, very finely pubescent, almost bare; apical aristal joint black. Palpi small, very stout and thick, bristly at the tips. Postocular cilia delicate, cheeks each with a single macrochæta. Eyes large, slightly pubescent; no ocellar tubercle or median frontal groove. Mesonotum subshining, black, tinged with luteous at the root of the wing; with one pair of dorsocentral macrochætæ and four strong scutellar bristles. Scutellum one-half wider than long, piceous or brownish. Abdomen very stout and thick entirely shining black, except for the honey-yellow hypopygial lamella; second segment not lengthened although it is the longest, with the following gradually growing shorter; no bristles at the sides of the second segment. Pleuræ subshining, black. Legs and coxæ luteous, tips of hind femora and four posterior tarsi infuscated. The legs are unusually short and stout, especially the posterior femora which are about one-third as broad as long, suddenly narrowed at the tip and faintly ciliate below. Tibiæ very strongly bristly, even the anterior pair with distinct setulæ; those on the middle and posterior pairs as long or longer than the diameter of the tibiæ; tibial spurs rather short. Wings hyaline, the apex with a grayish cloud; costal vein reaching slightly beyond the middle, with very fine, short and thickly placed bristles. First and third veins straight, the first twice as far from the humeral cross-vein as from the tip of the third; third furcate very near the tip, the cell thus formed very small and narrow, almost linear; first light vein straight except at the extreme base, following nearly straight; fourth light vein distinct. Both the heavy and light veins are black or very dark piceous. Halteres pale.

Female.—Larger, 3.5 mm, but otherwise differing only slightly in color. The side margins of the mesonotum behind the insertion of the wing and most of the scutellum are luteous, while the fourth and fifth

abdominal segments except the anterior corners of the fourth are orange yellow. The wings are very long and narrow in both sexes.

Described from two specimens, male and female, taken in copula, Willomore, Cape Colony, February 5, 1907 (Dr. Brauns).

Concerning their habits, Dr. Brauns writes that he found them in burrows in an old willow stump frequented by Cerambycidæ, where the large carpenter-bee, *Xylocopa caffra*, was also nesting.

The species is quite distinct from any known to me. It falls near a small group of other species like *A. halictorum* M. & B., *A. longifrons* Brues, *A. xanthozona* Strobl, etc. The legs are stouter than those of any member of the genus that I have seen, recalling those of *Hypocera* or *Phora*.

A new species of Termes.

By Nathan Banks.

Around Washington, D. C., there are two species of *Termes* that have posed as *T. flavipes*. The male of one is a larger, darker species and flies earlier in the Spring. This appears to be the true *T. flavipes*, according to the short description of Burmeister. The *Termes frontalis* Haldeman is this same species; the colors, size, and time of appearance of male agreeing with this form. The other species I shall call *Termes virginicus*. The two species may be separated by the following descriptions.

Termes flavipes Burmeister

Male.—Head, pronotum and thorax jet black, with black hair; mouth pale yellow; femora blackish, rest of leg pale yellow; abdomen brown apical part with many yellowish hairs; antennæ plainly as long as the head; wings plainly darkened. Length 9 to 10 mm. Flying in latter part of April or early in May.

Soldier.—Head about once and two-thirds as long as broad; the mandible and antennæ fully as long as width of head.

Termes virginicus n. sp.

Male.—Head, pronotum, and thorax brown, with brownish hair; mouth pale yellow; femora brown, rest of leg pale yellowish; abdomen brown, tip with yellowish hair; antennæ barely as long as head; wings not darkened, except on costa. Length 7.5 to 8 mm. Flying in June.

Soldier.—Head twice as long as broad; and the antennæ and mandibles scarcely as long as width of the head.

The male is readily separated from *T. flavipes* by its smaller size, paler color, paler wings; and the soldier by its more elongate head; both forms being more slender throughout than *T. flavipes.*

The new species I have taken from Falls Church and Chain Bridge, Va., and from Washington, D. C. The *T. flavipes,* I have from Falls Church, Va., Washington, D. C., Angelsea, N. J., and Sea Cliff, N. Y.

Two new species of Perdita (Hymenoptera).

By H. L. Viereck.

Perdita bradleyi n. sp.

♂.—In size and structure very much the same as *octomaculata*, in color more like *monardae*, in sculpture this differs from both of the preceding. Dorsulum highly polished, with rather widely separated and somewhat inconspicuous setigerous punctures. The scutellum and postscutellum are shining with scattered setigerous punctures, the pleura are in structure very like the scutellum; Metathorax shining, smooth and seemingly impunctate; abdomen shining, with widely separated setigerous punctures; dark portion of head dullish, the yellow portion polished, the entire surface with sparse setigerous punctures. Color: head and thorax mostly dark and metallic; the dark portion of the head and metathorax bluish the same portion of the rest of the thorax greenish; dorsum of abdomen mostly brown, seemingly black at base and near the apex; the lower half of the face and a little more also the front of the scape are lemon-yellow, as are the tubercles and an interrupted band on the pronotum. Longitudinally half of the flagellum is orange yellow with a brownish cast; anterior and middle legs and venter of abdomen almost exclusively lemon yellow; the posterior legs are partly yellow and partly brown as follows: Coxae with the greater portion of the upper half brown, more than half of the outer side of the femora brown, and the outer side of the tibiae entirely brown. There is a slender interrupted band of yellow along the apical margin of the first dorsal abdominal segment and a similar band at base of the fifth, as well as the fourth, dorsal abdominal segment. In addition there is a similar band at base and apex of the second and third dorsal abdominal segments. The wings are practically colorless, excepting for the nervures and the stigma, the former being dark brown along the costa and pale brownish, rather brownish testaceous elsewhere, the latter being translucent testaceous. The left wing has three submarginal cells by virtue of the first transverse cubitus forking near its base where it joins the cubitus. In the right wing there are but the normal (for this genus) two submarginal cells.

Type in the collection of the Acad. Nat. Sci. Phila., Penna. Type locality, Clementon, N. J.

The seven examples of this species before me were taken at type locality May 24, 1902, by my friend, Mr. J. Chester Bradley, in whose honor the species is named. Most, if not all of the specimens cited, have three submarginal cells in one or both wings in the same way as in the type, though in some specimens the forking takes place nearer the middle than the base of the nervure; the sculpture and color in the paratypes is practically the same as in the type.

Perdita novae-angliae n. sp.

♀, ♂.—In structure, sculpture and size almost the same as *bradleyi;* in color it differs very markedly from this and its only ally in the Alleghanian Zone—namely *octomaculata.*

According to Ashmead's "Classification of the Bees," this is an atypical *Macroteropsis*, differing in having the head longer than broad at least in the ♀ and in the labial palpi of the ♀ and ♂, having the first joint as long as or shorter than the succeeding joints combined.

♀.—Lower half of face is somewhat more polished and very sparsely punctate, with very indistinct setigerous punctures that become discernible only under a high power lens; *e. g.*, one that magnifies 15–20 diameters. The rest of the head shining, with more conspicuous and numerous setigerous punctures. Thorax in structure of tegument very like the upper half of the face, with the exception of the enclosed space of the metathorax, which looks bare and is apparently impunctate. Abdomen mostly appearing bare, the apical half of the venter and the fimbria being rather closely pubescent. All hair whitish; both wings have three submarginal cells on account of the forking of the first transverse cubitus which takes place between its junction with the radius and its middle. Color: Head and thorax mostly metallic greenish, the lower half of the face and somewhat more, in fact, the highly polished portion of the face, is blackish except for a brownish tinge along the anterior margin of the clypeus and a yellow mark on each side of the face near the junction of the eye and mandible, a yellow longitudinal band on the clypeus and mostly brown mandibles that are yellowish at base; wings practically colorless, the stigma and nervures, with the exception of the subcostal nervure which is brown, are slightly tinted with testaceous. The abdomen is mostly blackish, with the extreme apex brownish and the margin of the penultimate dorsal segment whitish testaceous. The second and third dorsal abdominal segments with a widely interrupted yellow band.

Antennae mostly dark brown, with the exception of the scape which is yellow anteriorly; legs blackish with the exception of the anterior tibiae in front where they are yellow, and the tarsi which are mostly yellow.

♂.—Practically the same as the ♀ differing only in ornamentation, having in addition to the yellow marks of the ♀, a yellow mark on each side of the clypeus, a yellow labrum—this member being brown in the ♀ and a yellow stripe on the anterior aspect of the middle tibiae. The abdomen is immaculate.

Type.—♀, Coll. Agl. Expt. Sta., New Haven, Conn.

Type.—♂, Acad. Nat. Sci. Phila., Pa.

Type locality, Poquonock, Ct.

One specimen, the ♀ type was collected by the writer in the type locality June 27, 1905. Two males were taken at Hyannis Point, Mass., July 4, 1904, by Mr. C. W. Johnson; thus, according to our present records, this is clearly an Alleghanian species.

Notes on Some Bees Collected by Mr. H. L. Viereck in New Mexico in 1902.

By T. D. A. Cockerell.

The bees treated herein are from the expedition sent out by the Philadelphia Academy of Natural Sciences in 1902, and are the property of that institution.

Xylocopa californica arizonensis (Cress.) var. a.

♂.—Clypeus with a cream-colored spot; clypeal keel reduced; first abdominal segment with hardly any hair.

Alamogordo, May 30.

Anthophora petrophila (Ckll.).

Alamogordo, May 3, 1 ♀. New to New Mexico. The hair of the vertex and thorax above is white, not mixed with black.

The male, not hitherto described, has been found by Dr. Davidson at or near Los Angeles. In my table of *Micanthophora* (Trans. Am. Ent. Soc., xxxii.) it runs to eight, and runs out because the fifth and sixth abdominal segments appear black, contrasting with the others because lacking the white tomentum. Thus it appears to run close to ♀ *A. flexipes*, but

it is very distinct from male *flexipes* by the normal middle tarsi. The flagellum is bright ferruginous beneath; scape yellow in front; clypeus with a broad yellow band; mandibles strongly bidentate; labrum yellow, with the usual dark spots, its lower edge with a little median notch, and a broad shallow excavation on each side of it; end of abdomen with a pair of short, blunt, light ferruginous teeth, and very short dark lateral spines.

Anthophora curta Provancher.

Alamogordo, May 7 to 15, many of each sex; Highrolls, June 11, ♀s. This excellent series led me to go over the whole of the available material of *curta* and its varieties, with the result of finding that *A. curta peritomae* Ckll. (ENT. NEWS, Oct. 1905) is a perfectly distinct species. In the male of genuine *curta*, there is at the apex of the abdomen a long plate, broad basally, and narrowed apically, where it is truncate. The lateral spines are strongly developed and black. In male *peritomae* the abdomen ends in a pair of short light ferruginous spines, so that with the slender dark lateral spines the abdomen is quadrispinose. In the females, the difference is not so obvious, but the hair on the inner side of the hind basitarsus is very dark brown or almost black in *A. curta*, clear ferruginous in *A. peritomae*. The yellow clypeal band is very broad, and extends practically to the eyes in *A. curta*, but in *A. peritomae* there is usually a wide interval between the ends and the orbital margins, while in the middle it sends a conspicuous pointed process upwards, this being usually absent in *curta*. The marginal cell of *curta* is very short; in *peritomae* it is more produced apically.

A. curta in my collection comes from San Pedro, California, July 10, a male peculiar for having the clypeus all black (*Ckll.*); Juarez, Mexico, May 12 (*Ckll.*); Las Cruces, N. M., male, Aug. 23, at flowers of *Wedelia incarnata*, female, May 12, at *Dithyrea wislizeni* (*C. H. T. Townsend*); Mesilla Park, N. M., males, Aug. 14, at plum flowers, Sept. 17, at *Pectis papposa* (*Ckll.*). I find no specimens from Northern New Mexico or Colorado.

A. peritomae (typical) comes from Las Cruces, N. M., males at *Solidago canadensis*, end of August (*Townsend* and *Ckll.*), females at *Helianthus annuus*, Sept. 21–22 (*Ckll.*); Mesilla Park, N. M., at flowers of *Isocoma wrightii*, Sept. 11, male (*W. Porter*); Pecos, July 15 (*W. P. Ckll.*); San Ignacio, Sept. 1 (*Porter* and *Ckll.*); Embudo, September 27, females at *Chrysothamnus* (*Ckll.*); Rociada, August 20 (*W. Porter*); Santa Fe, August, male at *Chrysopsis* (*Ckll.*);—all these localities in New Mexico.

Alamosa, Colorado (*Johnson*). There is a very evident preference for the yellow-flowered Compositae. The range is from the Transition Zone to the Middle Sonoran, in the latter overlapping that of *curta*.

Two varietal forms of *peritomae* may be recognized:

(*a*) var. *interspersa*. Male, with much black hair interspersed on vertex and mesothorax. The type is the male from Alamosa, reported in ENT. NEWS, Oct., 1905, p. 272, as *curta*. Another is from Rociada, N. M., at flowers of *Grindelia nuda*, Aug. 8 (*W. P. Ckll.*). Specimens from Santa Fe, July, and Las Cruces (one of these obtained by Townsend from *Solidago canadensis*, Aug. 27) are intermediate between *interspersa* and typical *peritomae*.

(*b*) var. *tinctula*. Light hair of vertex and thorax above, fulvous instead of white, in the female, with much black hair interspersed, in the male with few dark hairs. The type of *tinctula* is a ♀ from Rociada, at flowers of *Grindelia nuda*, Aug. 8 (*W. P. Cockerell*); others are from Las Vegas, at flowers of *Grindelia nuda*, Aug. 10 (*S. L. Miza*); Las Vegas, *Verbesina exauriculata*, July 31 (*Ckll.*); and a male from Santa Fé, August, at *Peritoma serrulatum*.

Melissodes tristis Ckll.

Alamogordo, May 13, 1 ♂; Highrolls, May 30–June 14, 4 ♂.

Melissodes pallidicincta Ckll.

Highrolls, May 30, 1 ♀; Cloudcroft, June 16, 1 ♀; Alamogordo, June 7, 1 ♀. This is probably the female of *M. tristis*. Mr. Viereck also took *M. gilensis* Ckll. at Cloudcroft, June 16, ♀.

Nomada ruidosensis Ckll.

Cloudcroft, June 16, 1 ♂. In this specimen the first abdominal segment has a couple of transverse yellow lines (rudiments of a band), and hence in my table of Rocky Mountain *Nomadæ* (Bull. 94, Colo. Exp. Sta.) it runs to *N. pallidella* Ckll.; but that species has yellow spots on scutellum, and much more yellow on first abdominal segment; the yellow color also is pale, not bright as in *ruidosensis*.

Prosopis basalis Smith.

Cloudcroft, May 27, 1 ♂. A boreal species.

Alamogordo is in the Middle Sonoran Zone, with a desert fauna characteristic of the southwest, some members of it extending to Southern California (as *Anthophora petrophila*) or even the Pacific coast region of Mexico (as *Perdita howardi*). Within a few miles, it is possible to ascend through the Upper Sonoran and Transition into the Canadian Zone, where, as at Cloudcroft, some typically boreal species occur. Thus the region is one of extraordinary interest and would be well suited for the establishment, preferably at a fairly high level, of a small permanent biological station. It may be added that the Sacramento Mountains afford, in addition to well-known boreal and subboreal species, a fine series of endemic forms.

On June 26, 1907, just at dusk, as I was walking in my garden, I noticed two sphinges hovering over the bed of pinks. I took them to be *Amphion nessus*, and was inclined to go on with my work. On second thought, however, I secured my net and captured both specimens. A later examination of them showed one to be *A. nessus*, but the other to my delight was *Sesia titan* ♂ Cramer, as figured in Holland's moth book.

Looking up other lists I find a variety of opinions as to the genus *Aellopos*. Holland gives *Sesia titan, tantalus, fadus* as three different species. Dyar gives *Aellopos tantalus*, Linnaeus syn. *titan*, Cramer. Smith's old list gives *Aellopos fadus* syn. *titan*, and gives *tantalus* as a different species. Smith's new list gives *Aellopos tantalus* Linn., and makes no mention of *titan*. I have two specimens sent me from Southern California under the name of *Aellopos tantalus*, which are smaller than the specimen I took, and they have only one white bar on fore wings instead of two, like Holland's illustration. "Who shall decide when doctors disagree? Has anyone taken this species so far north?"—W. E. Longley, Oak Park, Illinois.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1907.

The International Entomological Congress. A plan has been inaugurated to establish such a congress to meet for the first time in the year 1908. The purpose of the Congress is to promote the interests of entomological research and of biology in general by furthering the cordial co-operation between the entomologists of the different countries, stimulating research and directing it into channels where it may be most needed. We firmly believe that the meeting of entomologists of various nationalities can accomplish great good. The acquaintanceship and social intercourse alone would be of great benefit. This was well illustrated during the Zoological Congress. It was a great pleasure to meet entomologists from Europe and exchange ideas and find out what splendid fellows they were. We knew their work and reputations; but now we look upon them as personal friends in addition. We sincerely hope those promoting the International Entomological Congress will go on with the work and make the first meeting a great success. From the list of names of those advocating it, success would appear assured.

A NEW PARASITE OF THE DOMESTIC FOWL.—Last month Charles Euler, one of my students, brought in a peculiar mallophagid which he had found on a domestic fowl in Boulder. I turned to Professor Kellogg's papers, expecting readily to determine it, but could not make it agree with anything from *Gallus*. and so sent it to Professor Kellogg himself. He kindly informs me that it is *Lipeurus docophoroides* Piaget which was discovered by Piaget on California partridges, *Callipepla californica*, in the Zoological Garden of Rotterdam. Professor Kellogg has taken it on the same bird, wild, in California; but it has not hitherto been reported from any domestic gallinaceous bird.—T. D. A. COCKERELL.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

ENTOMOLOGIST APPOINTED FOR AGRICULTURAL COLLEGE EXPERIMENT STATION.—A New Department for the Study of Injurious Insects.—Farmers, fruit growers, truck gardeners, and in fact all who are interested in agriculture in North Carolina should be interested to learn that the A. & M. College and Experiment Station has established a *new department for the teaching and study of insects.* This is not a new line of work for the State, as the State Entomologist of the Department of Agriculture at Raleigh has, for a number of years, conducted the work of the inspection of orchards and nurseries, and undertaken investigation and control of certain injurious insect pests. There must be, however, many problems that the State Entomologist has not, and may not, be able to undertake.

The new entomologist, R. I. Smith, at the A. & M. College and Experiment Station at West Raleigh comes from Georgia, where he held the position of State Entomologist for a number of years.

NOTES ON THE CHIRONOMIDAE.—In Bulletin 86 of the New York State Museum, p. 125 (1905), I proposed the name *Ablabesmyia* for those species of the genus *Tanypus* Meigen, which have hairy wings and a sessile cubitus (Comstock) as in *monilis*, and retained the name *Tanypus* for those species having hairy wings and a petiolate cubitus, as in *punctipennis*. But since Skuse, in 1889, subdivided Meigen's genus and restricted the name *Tanypus* to the first group, and furthermore as Fries (1823), Curtis, and others had already given *monilis* as the type of *Tanypus*, I now consider that I was in error and therefore propose the following:

(*a.*) *Protenthes*, new name, type *punctipennis*, with *Tanypus* as defined by me ('05) und restricted by Kieffer ('06) as a synonym.

(*b.*) *Tanypus* Meigen (part), type *monilis*, with *Ablabesmyia* Johannsen, and *Isoplastus* Skuse, as synonyms.

I put *Isoplastus* Skuse as a synonym, because the characters given by its author in defining it are somewhat variable. The name moreover is preoccupied for Coleoptera.

Trichotanypus Kieffer, is a well-marked genus. The retracted position of the M-Cu cross vein, as well as other characters, will at once distinguish it from all other *Tanypinae*. *T. posticalis* Lundbeck, from Greenland, is the type. I have a specimen taken at Ithaca, N. Y.

Prodiamesa, probably *P. notata* Staeger, was sent to me from Colorado by Professor Cockerell. This is the first record of the occurrence of the genus in North America.

I have taken both male and female specimens of *Corynoneura atra* Winnertz (=*C. celeripes*) during the summer at Ithaca, N. Y. The males were seen in great swarms hovering among the shrubbery overhanging a little creek. The statements made by Kieffer (Genera Insec-

torum, Chironomidae) regarding the wing venation agree with my own observations. R, and the basal part of the costa are much thickened, but the costal cell is not quite obliterated. It is only when the wing is held slightly oblique that it appears as shown in Winnertz's figure (*Stettiner Entomologische Zeitung*, 1846).

There are several North American species of *Orthocladius* which possess hairy eyes, but the males have normal antennae and therefore differ in this respect from Kieffer's subgenus *Trichocladius*.—O. A. JOHANNSEN.

ALTHOUGH the collecting season in the vicinity of St. Louis, Mo., gave poor promise this year, owing to heavy frosts and icy nights succeeding an extraordinary warm spell in March, late summer and fall proved a collector's bonanza. Quite a number of *Terias mexicana* were taken in this locality for the first time since 1904, when they were quite common. *T. nicippe*, usually abundant, was very scarce. *Papilio philenor* was hardly in evidence until September, when exceptionally fine specimens were to be had in plenty. *Chloripppe celtis* and *C. clyton* were never before, in the writer's experience, so abundant. At the present time (October) the woods about here fairly swarm with *Paphia andria*, several freaks of this species having been taken recently. *Thymelicus brettus* and *T. aetna* were taken here this season and should be added to the "list of butterflies taken in the vicinity of St. Louis," as published in the July number of the ENTOMOLOGICAL NEWS.—AUG. KNETZGER.

NOTES ON POLYGONIA CHRYSOPTERA WRIGHT.—Mr. Victor L. Clemence and the writer discovered this species in the West Fork of the Big Santa Anita Canon, along the Sturdevant Trail, in the San Gabriel Mountains, near Pasadena, California, on June 19 of the past summer, at an elevation of 2500 feet. Only three specimens were taken on this occasion, the interesting character of the species not being particularly noticed. Another trip by the writer on the twenty-ninth of June was productive of eight more specimens.

This is the first time that this species has been collected in this part of the State, and it has only been seen in this restricted locality. This canon is large and overgrown with rank vegetation, with plenty of nettles (*Urtica*), and a stream, making an ideal place for such a group of butterflies. It is confidently expected that later in the season larvæ will be found.

Polygonia chrysoptera was described by Wright in his "Butterflies of the West Coast," p. 174-175, Pl. XXII, Fig. 222, b, c. My series of eleven specimens agree very well with those described by Wright. The black markings on the upper side are rather more intensified; but the underside is remarkably constant, and the most characteristic diagnostic character for the species. The character of the silver *C*, long, slender and barbed at both ends and the generally light color mark this species sharply from any other Californian species of *Polygonia*, and as remarked by W. G. Wright, this is the largest of our West Coast Polygonias—FORDYCE GRINNELL, JR.

I WISH to report an immense army of migrating *Anosia Plexippus* (Linn.) that passed through here this afternoon (Oct. 4th), going southward. The swarm of butterflies was about one and one-fourth miles wide, and I do not know how long, as they had been flying past for some time before I saw them, they continued to fly for about fifteen minutes after I saw them.

The majority were flying at about the height of the telegraph wires.

Occasionally one or two would drop from the main army and settle in the mud of the street for a few moments—possibly for refreshments—and for a while there were hundreds in the streets, but within a half hour they were all gone.

Their flight was not a swift one but was very steady. They had the appearance of being weary, for they would fly for a short while, then soar.

There were probably millions in this swarm and I could not help comparing them to the flights of the passenger pigeons of which I have read.—B. R. BALES, Circleville, Ohio.

PROF. C. F. BAKER wishes to announce that his address after November 1, 1907, will be Museu Goeldi, Para, Brazil, and that all letters and packages should be forwarded to him at that point.—C. F. BAKER.

Entomological Literature.

EVOLUTION AND ANIMAL LIFE.—An Elementary Discussion of Facts, Processes, Laws and Theories relating to the Life and Evolution of Animals. By David Starr Jordan, President of Leland Stanford Junior University, and Vernon Lyman Kellogg, Professor of Entomology and Lecturer in Bionomics in Leland Stanford Junior University. New York: D. Appleton & Co. 1907. 12mo. pp. xi, 489. 298 figures in the text, and three colored plates [of birds]. Cloth, $2.50 net.

In a prefatory note the authors say: "The book is composed primarily of the substance of a university course of elementary lectures delivered jointly by the authors each year to students representing all lines of college work. . . . . the authors feel that the interested general reader will find this small volume a fairly comprehensive introduction to our present-day knowledge of the factors and phenomena of organic evolution."

The following list of the titles of the chapters will show the order and manner in which evolutionary themes are treated. I. Evolution Defined; II. Variety and Unity in Life; III. Life, its Physical Basis and Simplest Expression; IV. Factors and Mechanism of Evolution; V. Natural Selection and Struggle for Existence: Sexual Selection; VI. Artificial

Selection; VII. Various Theories of Species-Forming and Descent Control; VIII. Geographic Isolation and Species-Forming; IX. Variation and Mutation; X. Heredity; XI. Inheritance of Acquired Characters; XII. Generation, Sex and Ontogeny; XIII. Factors in Ontogeny and Experimental Development; XIV. Paleontology; XV. Geographical Distribution; XVI. Adaptations; XVII. Parasitism and Degeneration; XVIII. Mutual Aid and Communal Life among Animals; XIX. Color and Pattern in Animals; XX. Reflexes, Instinct and Reason; XXI. Man's Place in Nature.

It is all clearly and interestingly told, with every here and there a happy phrase, such as "Natural selection does not create species, *it enforces adaptation*" (p. 63), or "It may be said that the inside of an animal tells what it is, the outside where it has been" (p. 174). The arguments for and against each theory of species-forming are briefly and impartially stated. The most valuable feature is the explanation of the fundamental characteristics of recent biological advances and their relations to evolutionary problems frequently referred to in the literature of to-day, such as fluctuating variations and Quetelet's law (p. 140), the theory of the purity of the germ cells as an explanation of Mendelian inheritance (p. 191), the significance of the chromosomes in inheritance (pp. 252–275) (but nothing of chromosomes as possible sex-determinants). It is not always easy to lay one's hand on simple explanations of such subjects.

The examples cited in the book are both old and new. If our old friend, Darwin's elephant, "the slowest breeder of all animals," again greets us (p. 60), we are refreshed with the symbiosis of the Aztec ants and the imbauba tree (p. 378). The egg-laying of the quinnat, or king salmon, is a favorite with the authors, as it is described three times (pp. 59, 342, 439), and twice (pp. 39, 343) do frozen Alaskan fish, fed to Esquimaux dogs, thawing, make their escape from the stomach alive, although one does not learn all this from the index.

It is of special interest in this place to mention that insects and entomological works are largely drawn on for illustration. We naturally expect this, since the junior author is a distinguished entomologist. Thus, the one definition of species quoted (pp. 12, 13) is that of Rambur; much of chapter IX is drawn from the studies of Kellogg and Bell on Coleoptera and Hymenoptera, while XVIII and XIX are largely entomological. Many interesting insects are figured throughout the book.

Pages 471–475 comprise an Appendix consisting of "references to general and special treatments of the subjects included in this book, arranged according to chapters. These references are confined to books and papers published in English . . . . [and] . . . . are mostly not to original papers, but to manuals, summaries and digests of evolution subjects." Many of the chapters contain quotations from authors other than those listed in this Appendix and we think that even "general readers and elementary students" would often like to know where to find the context of the citations.—P. P. C.

THE DECTICINAE (A GROUP OF ORTHOPTERA) OF NORTH AMERICA. By Andrew Nelson Caudell. Proc. U. S. National Museum, XXXII, pp. 285-410, ninety-four figures.

The interesting paper bearing the above title can justly be considered one of the most important recent contributions to systematic North American Orthopterology, based as it is on the examination of a great amount of type material, as well as a series of specimens of the group far in excess of that examined by any previous student of the Decticinæ of our continent. At best a difficult and puzzling group, the American forms of the Decticinæ present in several cases problems which are more than usually abstruse, and we believe the present work solves these problems much more satisfactorily than any thing which has preceded it.

The author recognizes twenty genera, fifty-nine species and ten varieties, of which four genera, twenty-one species and seven varieties are described as new. The character of the armature of the anterior tibiæ, which was an important character in Scudder's key to the group published a decade ago, is said to be most unreliable, and the cerci of the male are found to furnish valuable characters.

While the new forms described in the paper have as usual an interest to the worker in this field, the synonymy of some of the older species is of even greater interest, backed up as the work is in most cases by the examination of types, and for that reason specific references in the following brief resumé are limited to the status of some of the older species.

Aglaothorax is a new genus created for *Tropizaspis ovata* Scudder and two allied species; *Neduba* Walker is used in place of *Tropizaspis*, Walker's genus being the same, as recently shown by Kirby, while interesting field notes are added on *Neduba carinata*.. *Rehnia* is a new genus for *Rehnia victoriae* and *spinosa*, large forms from Guerrero, Mexico and Texas respectively, *Zacycloptera* is a new genus for *Z. atripennis*, from Nevada, characterized among other things by the extraordinarily short and broad wings. True *Drymadusa* not being found in America, a new genus *Anoplodusa* is created for *Drymadusa arizonensis* Rehn, which figures in two typographical errors as *arizonesis*. Evidence is submitted to show that *Engoniaspis* Brunner was based on individuals of *Atlanticus* Scudder. *Cacopteris ephippiata* Scudder is shown to be an *Eremopedes* and the same as *E. unicolor* which it replaces, while *Eremopedes popeana* Scudder and Cockerell is shown to be a synonym of *E. scudderi*. *Eremopedes balli* Caudell is shown to have been based on individuals of *Stipator stevensonii* as well as those of the form to which the name is restricted. The species *Plagiostira albofasciata* is found to be an *Eremopedes* and *P. gracile* Rehn is considered synonymous.

The work on the genus *Stipator* is particularly revolutionary, the three *"species" americanus, haldemanii* and *cragini* are considered identical and by a lapsus calami *americanus* Saussure is used as the

specific name instead of the older *haldemanii*. The author accords the same treatment to the three "species" usually known as *stevensonii*, *minutus* and *scudderi*.

The treatment of *Anabrus* is particularly interesting on account of the great difficulty workers have found in endeavoring to determine individuals of this genus. Uhler's *purpurascens* is considered a synonym of the typical *Anabrus simplex*, while *coloradus* Thomas is made one of three varieties of the type species. *Cacopteris* Scudder is shown to be a synonym of *Idiostatus* Pictet, while *Steiroxys bilineata* Thomas is transferred to the same genus, in addition to which Pictet's *Idiostatus californicus* is made a synonym of *hermanii* Thomas. *Platycleis fletcheri* new species, from Calgary, Assiniboia is remarkable as being the first New World representative of a hitherto Palæarctic genus.

The author of this revision of the American Decticinæ has given us a valuable and distinctly useful work and one for which the systematic Orthopterist is deeply indebted to him.—J. A. G. R.

DARWINISM TO-DAY. A DISCUSSION OF PRESENT-DAY SCIENTIFIC CRITICISM OF THE DARWINIAN SELECTION THEORIES, TOGETHER WITH A BRIEF ACCOUNT OF THE PRINCIPAL OTHER PROPOSED AUXILIARY AND ALTERNATIVE THEORIES OF SPECIES FORMING. —By Vernon L. Kellogg, Professor in Leland Stanford, Jr., University. New York: Henry Holt & Company.

In this work Professor Kellogg has given a very able and painstaking exposition of Darwinism past and present. The voluminous literature of the subject has been very thoroughly searched and the book is an excellent one for those that have neither the time or inclination to read through such a mass of detail for themselves. Valuable appendices giving the bibliography are at the end of chapters, and in many cases extracts from original sources. The work is primarily divided into two parts, Darwinism attacked and Darwinism defended.

INSECTS INJURIOUS TO VEGETABLES.—By F. H. Chittenden, Sc.D., United States Department of Agriculture. Illustrated. Orange Judd Company, New York.

This publication will be useful for those who do not have access to the literature of the subject and also for those who have and lack the time necessary to find it. The author says there are 12,645 titles in American economic entomology and 72,000 references to noxious insects. Some of the illustrations are crude but are doubtless useful enough for the purpose intended.

A CATALOGUE OF THE HEMIPTEROUS FAMILY ALEYRODIDAE.—By G. W. Kirkaldy. And ALEYRODIDAE OF HAWAII AND FIJI, WITH DESCRIPTIONS OF NEW SPECIES.—By Jacob Kotinsky. Bull. No. 2, Division of Entomology. Board of Commissioners of Forestry, Territory of Hawaii.

This is a useful and valuable publication.

CATALOGUE OF THE NEUROPTEROID INSECTS (EXCEPT ODONATA) OF THE UNITED STATES.—By Nathan Banks. The American Entomological Society, Philadelphia.

Fifteen years have elapsed since the previous catalogue by Mr. Banks was published, and it is needless to say that the literature has been brought up to date. There are nearly 900 species listed.

A REVISION OF THE AMERICAN COMPONENTS OF THE TENEBRIONID SUBFAMILY TENTYRIINAE. By Thomas L. Casey. Proc. Wash. Acad. Sciences. Vol. ix, pp. 275-522.

Many new genera and species are described. The work has the appearance of having been carefully prepared and shows great research into a difficult family of the Coleoptera.

Doings of Societies.

Minutes of meeting of the Brooklyn Entomological Society, Brooklyn, N. Y., March 7th, 1907. Fifteen members present, President Dr. Zabriskie in the chair.

The paper of the evening was presented by Dr. John B. Smith on "Some Shade Tree Insect Problems," illustrated with lantern slides.

The introduction into this country of the Brown-tail Moth and the Gypsy Moth, and the spread of these insects in the State of Massachusetts, through the New England States, have introduced quite new and important modifications of the insect problem as applied to shade and forest trees. Both of these insects are much more destructive than any of our native species, and while the Gypsy Moth spreads slowly, it is an omnivorous feeder, attacking conifers as well as deciduous trees; eating foliage of all kinds and even grasses in case of need. Where this insect is introduced all kinds of trees would have to be treated, and there would be no way of avoiding it by means of exempt varieties.

The Brown-tail Moth spreads more rapidly, but its caterpillars do not feed on so great a variety of plants. They do not attack conifers, and do not even eat all deciduous foliage. They have, however, one objection, and that is, the hairs are extremely poisonous, and when the insects are ready to pupate

they shed their hairs to make use of them in building their cocoons, and in this way the hairs fly about and are apt to come into contact with human beings. Where this happens, a nettling or poisoning is set up in most persons, which is sometimes very severe, and it is hard to get rid of it, especially where it affects the eyes. Property values have been very much reduced where these caterpillars occur, because people will not live in such places. The State of Massachusetts has spent millions of dollars in an attempt to control these insects, and is still fighting.

A history was given of the introduction of the species and the work that had been done in the past. At the present time, the United States Government is co-operating with the Massachusetts authorities in an effort to introduce European parasites and other natural enemies in the hopes that these might become domesticated and aid in keeping the introduced insects in check. The present line of distribution has been toward the northeast, because the prevailing winds during the summer on the New England coast are from the southwest. In consequence, while the insects have extended the full length of the United States coast line, from Boston northward, and even have reached the British possessions, they have not extended west further than Connecticut, and have not yet reached New York State. In New Hampshire an active campaign is under way against the insects, and that State has its forest to protect. Where the two species occur together, as they do in Massachusetts, a forest area would be doomed in a few years.

The caterpillars of the Brown-tail Moth hatch in late fall and hibernate as partly grown larvæ. They eat the last foliage, and the first foliage that comes out in the Spring. The Gypsy Moth hatches from the egg in May or June, and eats during the middle of the summer. By the time the caterpillars of this insect are gone, the Brown-tail Moths have laid eggs, and their young are almost ready to make a new start. In this way an infested area would be kept stripped for the entire season, and no tree will survive this more than two or three years. Conifers will stand one defoliation only.

The greatest danger of transporting the insect from one place to another comes from the trolley lines and from automobiles that run through every portion of the infested district and out of it into those that are yet uninfested.

GEO. P. ENGELHARDT, *Recording Secretary.*

A meeting of the Feldman Collecting Social was held May 15, 1907, at the residence of Mr. H. W. Wenzel, No. 1523 So. 13th Street, Philadelphia. Mr. E. Daecke, President, in the chair; thirteen members were present.

The President congratulated the newly elected members, and urged them to do what they can to help the Social, by prompt attendance, and by introducing communications at the meeting.

The resignation of Mr. Wm. J. Fox was read and accepted with regrets of the Social.

Mr. Harbeck offered the following correction: *Chaetona macroptera* v. d. Wulp, reported in meeting of Social on Dec. 19, 1906, as having been taken at Germantown, Pa., on May 21, '06, should have been Trenton, N. J., July 7, '06.

Dr. Castle exhibited some interesting Coleoptera taken at Angora, Pa., on May 13th of the present year.

Mr. H. W. Wenzel reported the capture by Mr. Kaeber of *Soronia grisea* at Clementon, N. J. Mr. Wenzel compared these specimens with the specimens in the Horn collection. The species is not in our list, being an introduced species from Europe.

Mr. Wenzel exhibited an apparatus devised to be used in the place of an umbrella, and for other uses in collecting Coleoptera.

Mr. Greene exhibited specimens of a parasitic Hymenopter (*Cryptus* species) bred from a *Cecropia* cocoon.

Mr. Laurent remarked that in working up his material collected in Florida this spring, he finds that there are more interesting species in it than he had expected.

Mr. H. W. Wenzel read extracts from a paper by H. C. Fall on the life history of *Sphaericus gibboides*. The species has been found to be a pest in Herbariums, collections of Coleoptera and red pepper.

Mr. Daecke exhibited some books which he recently acquired from the library of Baron Osten Sacken. Especially noteworthy is "Osten Sacken's Life," being copy with notes by himself in his own handwriting; also original drawings of the Diptera figured in the Biologia Centrali-Americana. Mr. Daecke reported the capture of 18 specimens of *Zabrotes subnitens* Horn, on strawberry blossoms at Manumuskin, N. J., on May 5, 1907. FRANK HAIMBACH, *Secretary*.

A meeting of the Feldman Collecting Social was held June 19, 1907, at the residence of Mr. H. W. Wenzel, No. 1523 So. 13th Street, Philadelphia. President Daecke in the chair; eleven members were present.

Cards were read from Messrs. Wenzel, Jr., and Kaeber, dated from Raton, New Mexico.

Mr. H. W. Wenzel reported the capture by his son of *Soronia grisea* at Malaga, N. J., on June 1, 1907, and suggested that this species must have established itself in New Jersey.

Mr. Harbeck exhibited specimens of *Eristalis flavipes* and *Mallota posticata*, showing mimicry of the two species.

Mr. Green exhibited his collection of Coleoptera taken at Malaga, N. J., on June 1, 1907; among it are specimens of *Merinus laevis*, *Ips obtusus* and *Boros unicolor*.

Dr. Skinner described the country now being collected over by Messrs. Wenzel, Jr., and Kaeber; he also gave a brief sketch of the itinerary of his intended trip to Canada on a collecting tour with Dr. Fletcher.

Mr. Daecke exhibited a box of Homoptera.

Dr. Skinner reported the death on June 5th of Mr. Harry D. Merrick of Cleveland, Ohio, formerly of New Brighton, Penna.

Mr. Viereck spoke of a trip near Brown's Mills-in-the-Pines, N. J., where he had looked for southern forms of Hymenoptera, but did not find any. He reported the capture at the same place of *Andrena cressoni* and *flavoclypeata* visiting blackberry blossoms.

Mr. Daecke reported the capture of *Cicindela consentanea* at Brown's Mills, N. J., and said it was common there.

Mr. Wenzel proposed a field meeting at Malaga, N. J., on July 20th, which was agreed to.

FRANK HAIMBACH, *Secretary.*

A meeting of the Feldman Collecting Social was held on September 18, 1907, at the residence of Mr. H. W. Wenzel, No. 1523 So. 13th Street, Philadelphia. Mr. E. Daecke, President, in the chair; thirteen members were present.

Mr. Viereck stated that from among thousands of larvae collected from an abandoned canal ditch in the Philadelphia Neck during the latter part of August and first week of September, two undoubted female *Culex sollicitans* were bred; the large majority of the bred material was *Culex pipiens.*

Mr. Hoyer reported the capture of eleven specimens of *Buprestis rufipes*, from July 21 to August 28, 1907, at Angora, Pa., flying on dead or dying beech.

Mr. Greene stated that he observed females of *Chloealtis conspersa* ovipositing on dead beach at Angora, Penna. The same speaker exhibited specimens of *Cicindela unipunctata* Fab., taken at Malaga, N. J., September 15, 1907; *Sandalus petrophya* Knoch, Castle Rock, Penna., August 25, 1907; *Leptura emarginata* Fab., Lehigh Gap, Penna., July 23, 1907; *Ips obtusus* Say, Lehigh Gap, Penna., July 23 to 25, 1907, all collected by Mr. C. T. Greene.

Mr. Laurent made some remarks regarding the Denton and Riker mounts for insects, pointing out that there is still room for improvement. The speaker said that in his opinion the present mounts are all right for exhibition purposes and for the use of scholars in our schools, but of no practical use in a large study collection, where thousands of specimens are to be considered.

Mr. Wenzel spoke upon his son's trip to Southern Arizona, and exhibited a large number of interesting species, among which were series of *Amblychila baroni* and *Cicindela santaclarae;* of the latter, three forms were taken—green, brown and black, all with maculations. Series of three species of *Plusiotis*, also *Crioprosopus magnificus*, one of the most beautiful Cerambycids, were exhibited. The speaker said that among

the smaller species the collection would prove very rich. Pictures taken by Mr. Wenzel on the trip showing the different localities in which the collecting was done were shown.

Mr. Daecke spoke of his trip to Boston, Mass., during the time of the meeting of the Zoological Congress and the Entomological Society of America, in the latter part of August. Mr. Daecke reported the capture on August 3, 1907, at Stone Harbor, N. J., of *Diachlorus ferrugatus*.

It was agreed that the Twentieth Anniversary of the Social be appropriately celebrated, and Saturday evening, December 28, 1907, was chosen as the time of the said meeting.

FRANK HAIMBACH, *Secretary*.

A meeting of the Brooklyn Entomological Society was held April 4, 1907. Dr. Zabriskie in the chair; fifteen members and one visitor present.

Messrs. Christian Olsen and Alolf Chudova, both of Brooklyn, were elected members.

Mr. R. P. Dow's address, "The Dignity of Nomenclature," was a plea that in naming insects the lofty ideals of the great Linnaeus should be lived up to. Linnaeus did not name any insect which already had a name. He searched the Hebrew scriptures, the writings of the great Greeks and Romans. For ages man was too busy to name creatures, except when useful for food, or clothing, or dangerous.

Linnaeus's first generalization was a noble insect—a noble name; an insignificant insect and a humble name. The Lepidoptera he resolved to recreate out of *Papilio*—the Greek emblem of the soul. *Papilio machaon* was the first butterfly named. All the *Papilio* represented to his poetic conception the warriors before Troy. In the Saturnidae he conceived the race of peaceful giants of the golden age—*Cecrops*, *Attacus*, *Prometheus* and others. The beautiful genus *Actias* is devoted to the goddesses of the moon in all aspects, thus we have *luna*, *selene*, *artemis*, *leto*, etc. In *Sphinx* he recalled the silent guardians of the ancient Nile.

The genus *Catocala*, more poetically *Parthenos*, sacred to Athene, was determined in 1805. *Nupta*, *promissa*, *relicta*,

vidua, *sponsa* and many others were consistently named, all representing attributes of attendants in the Goddess's train. *Hesperia*—from the God Hesperus, God of the Setting Sun, hence the west, were beautifully named in America, *e.g.*, *metacomet*, *trignois*, *pottawotamie*, *pocahontas* and many other Indian names. Prof. Smith pointed out that the adoption of these names met with great opposition at the time from the prosaic scientists of Europe. The Airhorses, *plexippus*, *archippus*, *disippus* and others were cited as extremely appropriate.

The indignity of naming beautiful *Papilio* after living explorers or entomologists met with condemnation.

GEO. P. ENGELHARDT, *Cor. Secretary.*

A meeting of the Brooklyn Entomological Society was held May 2, 1907. President Dr. Zabriskie in the chair; seventeen members and two visitors present.

A latter from Mr. W. W. Hoover, a former member, dated at Sudan Mission, Northern Nigeria, West Africa, was read. Mr. Hoover described his journey, his present surroundings and several insects which had come to his notice.

Mr. Schaefer exhibited one specimen each of *Leptura circumdata* and *Leptura proxima*, found in copulation by Mr. Shoemaker.

Mr. Engelhardt showed a photograph taken recently in Flatbush, Brooklyn, of a red oak tree, on which the galls *Amphibolips confluentus* grew in remarkably large numbers.

Mr. Joutel stated that he had reared a number of hybrids of *cynthia* and *promethea*. The moths, though showing some differences in maculation, adhere closely to the mother form—*cynthia*.

Dr. Zabriskie addressed the Society on "Microscopical Examinations of External Structures of Hemipterous Insects of the genera *Oncopethis*, *Sinea*, *Acholla* and *Phymata*." The address explained the continuation of the same line of research as that presented on a former occasion, referring to the genera *Anasa*, *Lygaeus* and *Alydus*. The address was illustrated by fifty-three lantern slides.

GEO. P. ENGELHARDT, *Cor. Secretary.*